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NEW YORK, NY 10112

EXAMINER
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RUGGLES, JOHN S

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 08/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/648,317

Applicant(s)

KURODA ET AL.

Examiner

John Ruggles

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 7-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION*****Election/Restrictions***

Applicants' election with traverse of Group I (claims 1-6) in the reply filed on 5/19/05 is acknowledged. Applicants' reasons for traversal are not found persuasive, because the basis for restriction is still supported at least by the following: (1) the inventions of Groups I, II, and III are distinct from each other in accordance with MPEP § 806.05(e - g) for the reasons previously set forth, (2) these distinct inventions have acquired a separate status in the art as shown by their different classification as well as their recognized divergent subject matter (both of which were previously indicated and neither of which has been specifically disputed by Applicants), and (3) examination of these distinct inventions together would place serious additional burden on the USPTO Examiner for conducting the diverse additional searches that would be required for each of these distinct inventions (MPEP § 808.02). Applicants are mistaken if they believe that advocacy of serious additional burden for the USPTO Examiner would somehow lessen burden on the USPTO as a whole.

Furthermore, MPEP § 803 states, in part, "a serious burden on the examiner may be *prima facie* shown if the examiner shows by appropriate explanation of separate classification, or separate status in the art, or a different field of search as defined in MPEP § 808.02". The distinct inventions of Groups I, II, and III have been previously shown to be separately classified, so Applicants' request to withdraw the previous restriction requirement would place a serious burden on the Examiner. Therefore, the restriction requirement is still deemed proper and is now made FINAL.

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Claims 7-12 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions.

### ***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "706" at page 13 lines 11-18 [0046] and "206" at page 20 line 7 [0091] have both been used to designate the workpiece substrate having a resist coating 707 for exposure in the near-field exposure apparatus as shown by Figure 7.

The drawings are further objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "206" has been used to designate both (a) the workpiece substrate (page 20 line 7 [0091]) having a resist coating 707 for exposure in the near-field exposure apparatus (as shown in Figure 7) and (b) the patterned light shield portions on the near-field photomask 201 (as shown by Figure 2 and described at page 32 lines 9-19 [0106-0107]).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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The drawings are also objected to because: (1) in Figure 2, reference characters "204" and "208" do not refer to the proper features as described at page 32 lines 9-22 [0106-0107], in which "204" should represent the second slit opening(s) and "208" should represent the area crossed by both the gaps between patterned light shield portions 206 and the second slit openings 204 and (2) in Figure 3, reference character "308" does not refer to the area crossed by both the gaps between light shield portions 306 and the second slit openings 304, as described at page 33 lines 9-22 [0109-0110]. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Specification*

35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms, which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification are: (1) at page 1 lines 23-24 [0003], "At the present," should be changed to --At [[the]] present,--; (2) at page 2 line 25 to page 3 line 2 [0007], "transferring a pattern of th photomask onto a resist at a time by using near-field light" should be corrected to --transferring a pattern of the photomask onto a resist ~~at a time~~ by using near-field light--; (3) at page 7 lines 23-25 [0029], the phrase "illuminating a polarized light, which has an electric field component parallel to the rows of first slit openings, to the near-field photomask" is unclear and should be changed to e.g., --illuminating a polarized light, which has an electric field component parallel to the rows of first slit openings, onto the near-field photomask--, etc., if this best represents Applicants' original intention; (4) at page 8 lines 15-25 [0032], it is unclear whether the intensity of generated near-field light is larger (more intensified) when the direction of the electric field of the incident light is either (a) parallel to the slit opening or (b) perpendicular to the slit opening (in response to this objection, Applicants must clarify the record on this issue, show specific support for this position in the specification as originally filed, and make all amendments necessary to consistently express this position throughout the specification without adding any new matter); and (5) page 11 line 10 [0039] describes the thickness of mask base 601 to be only in the range of 0.1 to 1  $\mu\text{m}$ , but page 12 line 5 states that this same thickness is preferably in the much broader range of 0.1 to 100  $\mu\text{m}$  (so Applicants must clarify their original intention and amend the specification

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accordingly without adding any new matter). (6) Furthermore, Applicants have failed to fully explain how polarization of incident light as shown in the instant Figures (e.g., Figure 1, etc.) to be in the same direction as the first slit openings (e.g., 103 in Figure 1, etc.) would result in exposing only the resist under the areas crossed by both the gaps between patterned light shield portions (e.g., 106 in Figure 1, etc.) and the second slit openings (e.g., 104 in Figure 1, etc.), but would somehow prevent exposing the resist under the first slit openings. Applicants' description of this effect at page 8 line 13 to page 9 line 12 [0032-0033] is confusing and not fully enabling. Note that due to the number of errors, those listed here are merely examples of the corrections needed and do not represent an exhaustive list thereof.

Appropriate correction is required. An amendment filed making all appropriate corrections must be accompanied by a statement that the amendment contains no new matter and also by a brief description specifically pointing out which portion of the original specification provides support for each of these corrections.

### ***Claim Objections***

Claim 5 is objected to because of the following informalities: "a plurality second slit openings" should be corrected to --a plurality of second slit openings--. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2, 4, and 6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contain subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claims 2, 4, and 6, Applicants have failed to fully explain how polarization of incident light as shown in the instant Figures (e.g., Figure 1, etc.) to be in the same direction as the first slit openings (e.g., 103 in Figure 1, etc.) would result in exposing only the resist under the areas crossed by both the gaps between patterned light shield portions (e.g., 106 in Figure 1, etc.) and the second slit openings (e.g., 104 in Figure 1, etc.), but would somehow prevent exposing the resist under the first slit openings. Applicants' description of this effect at page 8 line 13 to page 9 line 12 [0032-0033] is confusing and not fully enabling.

However, the language of both claims 2 and 4 merely recite intended uses for the near-field mask having only the actual structural limitations of claim 1, on which both claims 2 and 4 depend. For the purpose of this Office action and in order to advance the prosecution of this application, claims 2 and 4 are interpreted based on their actual structural limitations, which are considered to have the capability to perform the intended uses recited by these claims. See MPEP § 2114 and *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).



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Also, for the purpose of this Office action and in order to advance the prosecution of this application, claim 6 is interpreted broadly to include a light illuminating means for polarized light in a direction that is parallel to either the first or second slit openings (in a direction which is aligned along either the x-axis or y-axis) of the near-field mask.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear whether the phrase “illuminating a polarized light, which has an electric field component parallel to said rows of first slit openings, to said near-field photomask” means that (a) the polarized light is illuminated **onto** the near-field photomask, (b) the first slit openings are located **on** the near-field photomask, or (c) both (a) and (b). For the purpose of this Office action and in order to advance the prosecution of this application, claim 6 is interpreted in accordance with (c) above.

### ***Claim Rejections - 35 USC § 102/103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1-2 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Ebbesen et al. (US Patent 6,236,033).

Ebbesen et al. teach enhanced optical transmission apparatus utilizing metal films having apertures (title) for various applications, including near-field optical devices and masks for sub-wavelength photolithography (abstract, col. 2 lines 27-28). Figure 17A shows a mask having a metal blocking layer with an H-shaped opening made up of first parallel slit openings connected by a perpendicular interlinking second slit opening for exposure of a resist (col. 15 lines 25-30). The exposure wavelength is much greater than the size of apertures or the width of slit openings (124a, col. 15 lines 18-20, even to the extent that the ratio of slit opening width to the exposure wavelength can be as small as about 0.1, col. 2 lines 61-67) and this exposure wavelength is described to come from a "regular UV light source" instead of a deep-UV source (col. 15 lines 40-42, which is understood to mean that the exposure wavelength is in the range of 300 nm to 400 nm). Therefore, the slit opening width can be as small as 0.1 times the exposure wavelength or about 30 nm to 40 nm (reading on instant claims 1-2 and 4 for first and second slit opening

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widths of 100 nm or less). When the incident exposure light is "p-polarized" to have an electric field parallel to the x-axis while the metal film is rotated about the y-axis through an angle  $\theta$  as shown by Figure 7, the coupling of light with surface plasmons on the metal surface with any periodic structure (such as a periodic surface topography or a periodic array of apertures or slit openings) follows momentum conservation (col. 9 lines 23-30). The beneficial increase in photon energy or light intensity for the metal surface having periodic structures is shown by Figure 8B in comparison to Figure 8A for the metal surface without periodic structures (col. 10 lines 1-7).

Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuroda et al. (US Patent 6,171,730).

Kuroda et al. '730 teach a near field evanescent light exposure process and a near field exposure apparatus that includes a near field mask having an opaque shading layer with aperture widths of about 100 nm or less (title, abstract), but preferably in the range of 1-100 nm, as shown by Figures 2A and 2B (col. 5 line 41 to col. 6 line 40). Figure 2A shows rectangular block form L-shaped slit openings in the opaque shading layer on the near field mask, but any desired pattern of slit openings such as S-shaped slit openings or the like are also contemplated (col. 6 lines 40-42, which when drawn in similar rectangular block form (as is common in mask patterns) would include parallel first slit openings interlinked by perpendicular second slit openings arranged at predetermined intervals, reading on instant claims 1-2 and 4-5). Figures 8A and 8B show a near field mask having rectangular block form L-shaped slit openings of different widths in the opaque shading layer, but the shape, width, length, and size of the slit openings are

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not limited so that any desired shape can be selected, such as specifically contemplated S-shaped slit openings (col. 13 lines 12-15). In Figure 8A, the width of the light shading layer portion between adjacent parallel first slit openings appears to be equal to the width of perpendicular second slit openings and this relationship is further contemplated to also be preserved for alternative S-shaped slit openings (which when drawn in rectangular block form (as is common in mask patterns) would include parallel first slit openings interlinked by perpendicular second slit openings arranged at predetermined intervals, reading on instant claims 1-5). The near field exposure apparatus shown by Figure 1A includes a collimator lens 103 to conform exposure light from the light source into parallel light beams 102 for exposure through the near field mask 106 (col. 3 line 45 to col. 4 line 10).

Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuroda et al. (US Patent 6,187,482).

Kuroda et al. '482 teach a near field mask for evanescent light exposure and an apparatus for making a pattern using the near field mask (title, abstract). The mask includes a transparent base or substrate 201 and a metallic thin film shading member 203 having minute apertures 204, each having a width  $< 100$  nm, which is small in comparison with the wavelength of exposure light (abstract, Figure 2, col. 4 lines 49-54). The width of the apertures is specifically stated to be less than the wavelength of exposure light (col. 7 lines 61-62). Figure 3A shows hook-shaped (rectangular block form L-shaped) slit openings 303 less than 100 nm wide in the opaque shading layer on the near field mask, but there is no limit on length and the patterns can be selected freely in this direction, such as specifically contemplated alternative S-shaped slit

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openings (col. 7 line 13 to col. 8 line 15, which when drawn in similar rectangular block form (as is common in mask patterns) would include parallel first slit openings interlinked by perpendicular second slit openings arranged at predetermined intervals, reading on instant claims 1-2 and 4-5). Also in Figure 3A, the width of the light shading layer portion between adjacent parallel first slit openings appears to be equal to the width of perpendicular second slit openings and this relationship is further contemplated to also be preserved for alternative S-shaped slit openings (which when drawn in rectangular block form (as is common in mask patterns) would include parallel first slit openings interlinked by perpendicular second slit openings arranged at predetermined intervals, reading on instant claims 1-5). The exposure apparatus shown by Figure 1 includes a collimator lens 103 to conform exposure light from the light source 101 into parallel light beams 102 for exposure through the near field mask 106 of a resist 107 (col. 4 lines 1-45).

Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Yang (US Patent Application Publication 2005/0026047).

Yang teaches a mask for reducing proximity effect(s) (title, abstract). Figure 3 (a) shows a close-up diagram of a mask embodiment having first parallel space openings or slits of width "74" > the width "72" of light shielding feature 70. Since the width "72" = 1/4 to 2/5 (25% to 40%) times the exposure wavelength [0032-0033] disclosed to be 365 nm for conventional mercury I-line exposure light (in prior art US Patent 5242770 [0015]), the width "74" > about 91 nm to 146 nm (reading on instant claims 1-2 and 4 for parallel first slit openings having a width of 100 nm or less). The first slit openings are interlinked by perpendicular second slit openings

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(reading on instant claim 5 for plural second slit openings arranged at a predetermined interval) between light shielding features “60”. These second slit openings appear to have a width about equal to the width “64” (of feature “60”). Since the width “64” is  $1/4$  to  $2/5$  times the exposure wavelength (about 91 nm to 146 nm), the second slit openings have a width of about 91 nm to 146 nm (reading on instant claims 1-2 and 4 for interlinking perpendicular second slit openings having a width of 100 nm or less). The width (about 91 nm to 146 nm) of the second slit openings is equal to the width “72” (about 91 nm to 146 nm) of light shielding features “70” adjacent to the first slit openings (instant claim 3).

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Kuroda et al. (US Patent 6,171,730) or Kuroda et al. (US Patent 6,187,482).

While neither Kuroda et al. '730 nor Kuroda et al. '482 specifies exactly how the alternative near field mask S-shaped patterns were to be drawn, it would still have been obvious to one of ordinary skill in the mask art at the time of the invention to have modified the near field mask having parallel first slit openings and perpendicular second slit openings in rectangular block form L-shaped patterns (taught by either Kuroda et al. '730 or Kuroda et al. '482) to the specifically exemplified alternative S-shaped patterns drawn in rectangular block form (which is common for mask patterns and is suggested by the rectangular block form L-shaped patterns specifically shown by either Kuroda et al. '730 or Kuroda et al. '482). These rectangular block form S-shaped patterns would be readily expected to have parallel first slit openings interlinked by perpendicular second slit openings arranged at predetermined intervals (instant claims 1-2 and 4-5). It would also have been obvious to preserve the rectangular block form L-shaped pattern

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equality (shown by either Kuroda et al. '730 or Kuroda et al. '482) between (a) the width of the light shading layer portion between adjacent parallel first slit openings and (b) the width of perpendicular second slit openings when forming alternative rectangular block form S-shaped patterns having parallel first slit openings interlinked by perpendicular second slit openings arranged at predetermined intervals (instant claim 3).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Kuroda et al. (US Patent 6,171,730) or Kuroda et al. (US Patent 6,187,482) in view of Ebbesen et al. (US Patent 6,236,033) and/or Alkaisi, M. M. et al., "Sub-diffraction-limited patterning using evanescent near-field optical lithography", (1999) Applied Physics Letters, Vol. 75, No.22, Pages 3560-3562.

Neither Kuroda et al. '730 nor Kuroda et al. '482 specifically teach inclusion of a light polarizer to direct illumination light along a particular direction with regard to either the first or second slit openings of the near-field mask in the near-field exposure apparatus.

As discussed above, Ebbesen et al. teach a beneficial increase in light intensity for exposure of a resist when the incident exposure light is polarized to have an electric field parallel to the x-axis of a mask having periodic structures and an H-shaped opening made up of first parallel slit openings connected by a perpendicular interlinking second slit opening.

Alkaisi et al. teach clear and faithful reproduction through a near-field mask having rectangular apertures or slit openings that are 70 nm wide (which is  $< 1/5$  times the wavelength of incident light). High transmission (intensity of transmitted light) through the mask slit openings is always achieved for at least one polarization of incident light through the near-field

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mask as shown by Figure 2(b) (page 3561, left col., fourth full paragraph). Polarization of incident light in the direction perpendicular to the mask slit apertures (for transverse magnetic (TM) polarization) results in high light transmission through the mask slit apertures to expose a resolved pattern in the top 40 nm of the resist layer (as shown in Figure 3(a) on page 3562, left col., last paragraph), whereas polarization of incident light in the direction parallel to the mask slit openings (for transverse electric (TE) polarization) does not result in a clearly resolved pattern to any depth in the resist layer (as shown in Figure 3(b) on page 3562, right col., lines 1-4). Thus, exposure of the resist will be dominated by the well-resolved, high-intensity TM profile (page 3562, right col., lines 4-7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have included a light polarizer to direct illumination light along a particular direction with regard to slit openings in the near field mask (as taught by Ebbesen et al.) in the near-field exposure apparatus (as taught by either Kuroda et al. '730 or Kuroda et al. '482) in order to achieve a beneficial increase in light intensity for directional exposure of a resist through the mask pattern (as taught by Ebbesen et al.). Also, it would have been obvious in the near field exposure apparatus taught by either Kuroda et al. '730 or Kuroda et al. '482 to have included a light polarizer to direct illumination light perpendicular to the second slit openings in the near-field mask (when it is desirable to selectively expose the resist, as taught by Alkaisi et al.) in the near-field exposure apparatus using a near-field mask having parallel first slit openings interlinked by one or more perpendicular second slit openings (e.g., from S-shaped patterns drawn in rectangular block form as taught by either Kuroda et al. '730 or Kuroda et al. '482). This is because Alkaisi et al. teach that exposure of the resist will be dominated by a well-



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resolved, high-intensity profile of the near-field mask slit openings running in a direction that is perpendicular to the direction of polarized incident light. Thus, in the near-field mask exposure using a near-field mask having parallel first slit openings interlinked by one or more perpendicular second slit openings, the resulting resist image would be expected to be dominated by stronger exposure through the second slit openings without exposure through the first slit openings, when the incident light is polarized in a direction parallel to the first slit openings and perpendicular to the second slit openings (as taught by Alkaisi et al. in combination with either Kuroda et al. '730 or Kuroda et al. '482).

Applicants cannot rely upon the foreign priority paper(s) to overcome any of the above rejections because a translation of said paper(s) has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

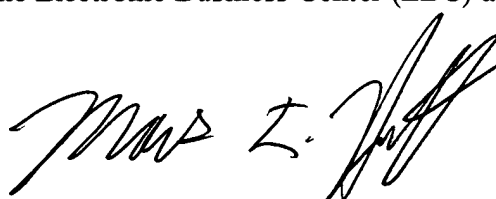
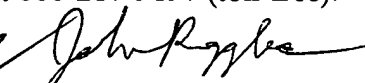
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Ruggles whose telephone number is 571-272-1390. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

   
John Ruggles  
Examiner  
Art Unit 1756

**MARK F. HUFF**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 1700**